

The Woman's College of
The University of North Carolina
LIBRARY



CA
no. 466

COLLEGE COLLECTION

Gift of
KHUDAIJA RIZWANA

REACTIONS TO FAILURE IN PRESCHOOL
CHILDREN FROM DIFFERENT ETHNIC
AND SOCIO-ECONOMIC BACKGROUNDS

by

Khudaija Rizwana

A Thesis submitted to the
Faculty of the Graduate School at
The University of North Carolina at Greensboro
in Partial Fulfillment
of the Requirements for the Degree
Master of Science

Greensboro
February, 1966

Approved by

Mary Elizabeth Keister
Director

APPROVAL SHEET

This thesis has been approved by the following committee of the Faculty of the Graduate School at the University of North Carolina at Greensboro, Greensboro North Carolina.

Thesis
Director

Mary Elizabeth Keister

Oral Examination
Committee Members

Irwin V. Sperry

Barbara E. James

M. Elaine Binger

February 7, 1966
Date of Examination

297137

ACKNOWLEDGMENTS

The researcher wishes to express her appreciation to the members of her graduate committee: Drs. Mary E. Keister, Elaine Burgess, Barbara James, and I. V. Sperry, for their constructive criticisms of the design and content of the thesis. Special notes of thanks are extended to Dr. Keister for direction of the thesis as well as encouragement and moral support; and to Mr. R. D. Tucker, for classification of the family background data.

The cooperative efforts of the directors, teachers, parents, and children from the following day care centers in Greensboro, are highly appreciated, who made the study possible: Metropolitan Day Nursery, Bennett College Children's House, Council House Day Care Center, Central Nursery and Kindergarten, and Hester's Creative Schools for Children. Mrs. Elsie Love of Grimsley Kindergarten helped in drawing and cutting the figures for the Puzzle-box.

Particular mention is made of the writer's American friend and patron Mrs. Kathleen Abe, for her understanding and continual help with time and money, and moreover, her friendship.

RIZWANA, KHUDAIJA. Reactions to Failure in Preschool Children from different Ethnic and Socio-economic Backgrounds. (1966) Directed by: Dr. Mary Elizabeth Keister. pp. 98.

The objective of the study was to describe the reactions to a frustrating test situation of children from different racial and socio-economic backgrounds. The test used to measure the reactions to failure was the Keister Puzzle-box Test.

Five day care centers in Greensboro, North Carolina, enrolling children from three to six years of age, furnished subjects for the study. Family background information on each child was obtained, and the subjects were classified into middle and lower class groups using criteria of parents' occupation, education, income, and area of residence. The total number of subjects was 114 (37 middleclass Negro, 29 lower class Negro, 29 middle class white, and 19 lower class white).

The mean and the standard deviation were computed for the per cent of the total test time spent in each category of behavior by each group of subjects. The following comparisons were made: (a) younger vs older children; (b) girls vs boys; (c) Negro vs white; (d) middle class vs lower class; (e) middle class Negro vs lower class Negro; (f) middle class white vs lower class white; (g) middle class Negro vs middle class white; (h) lower class Negro vs lower class white. The Mann-Whitney U Test (nonparametric statistics) was applied to the group comparisons.

The study attempted to answer five questions, and the

following conclusions were drawn:

1. How do children between the ages of three and six years react to a situation in which they are experiencing frustration? They generally made attempts to solve the problem, rationalized their lack of success relatively little, and tried to achieve success through seeking help with the task. Within the total group, the younger age group spent less time attempting to solve the puzzle and sought more help in solving it than did the older age group. There was no significant difference between the behavior of boys and girls.

2. Do Negro children regardless of class membership react differently in this situation than white children? There was no difference in performance on this test between the white and Negro groups as a whole.

3. Do children from a lower socio-economic group, regardless of race membership react differently from children who are members of a middle socio-economic group? There was no difference in performance on this test between the total groups of middle class and lower class children.

4. Within racial groups are there differences between children who come from different socio-economic backgrounds? As between middle class and lower class Negro subjects no difference in performance was found. As between middle class and lower class white subjects, there was a statistically significant difference in "seeking help." The lower

class subjects asked more help than the middle class subjects.

5. Within class groups are there differences between children who come from different racial backgrounds? As between middle class Negroes compared to middle class whites, there was no difference in performance on this test. As between lower class Negro and lower class white subjects, there was a significant difference in "seeking help," with the white children asking more help than the Negro children.

Since the differences found between the sub-groups were on the whole slight and somewhat inconsistent, the conclusion must be drawn that other factors besides race and class were operating as variables.

TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION	1
Statement of the Problem	1
Reasons for Undertaking the Study	3
Limitations of Studying Children	4
Test of Failure	4
Definitions	6
Questions Which the Study Attempts to Answer	7
II. REVIEW OF LITERATURE	9
Theories of Frustration	9
Studies Which Have Tested Theories of Frustration	11
Other Relevant Studies of Children's Behavior in Frustrating Situations	18
Relevant Studies Involving Race as a Variable	25
Relevant Studies of Social Class Differences	33
Summary	40
III. PROCEDURE	42
Subjects	42
Ages of Subjects	44
The Test	44
The Record	49
Reliability of Observation	51
Scoring and Statistical Analysis	51
IV. RESULTS AND DISCUSSION	54
Findings	54
General Findings	54
Findings - "Attempts to Solve Alone"	56
Findings - "Rationalizing"	60
Findings - "Seeking Help"	63
Qualitative Analysis of Responses	65

Chapter	Page
Interpretation of Results - Discussion. .	67
General Comments	67
Statistically Significant	
Differences Between Groups	71
The Questions Answered By The Study. .	74
V. SUMMARY AND CONCLUSIONS	79
Summary	79
The Problem	79
Subjects	80
The Test	80
Scoring - Calculating Group	
Differences	81
Limitations	81
Conclusions	82
Recommendations for Further	
Research	83
REFERENCES	85
APPENDIX A	90
APPENDIX B	93

LIST OF TABLES

Table	Page
1. Distribution of Subjects According to Race and Class Membership and Day Care Center	45
2. Ages (In Months) of Subjects	46
3. Percent of Total Time Spent in Three Types of Behavior	54
4. Percentage Distribution of Subjects Who Succeeded in Solving the Puzzle and Subjects Who Walked Out Sometime after Seven Minutes of Test	57
5. Percent of Total Test Time Spent in "Attempts to Solve Alone"	58
6. Percent of Total Test Time Spent in "Rationalizing"	61
7. Percent of Total Test Time Spent in "Seeking Help"	64

CHAPTER I

INTRODUCTION

Statement of the Problem

From birth to death, throughout the entire life span, the individual is involved in learning--learning to cope with the difficulties and complexities of everyday life. He learns when to cry and when to refrain from crying; when to get up from a fall and try the next step and when to wait for help in taking the next step; when to reach out for help and when not to expect help to be forthcoming; when to try harder and when to give up. Every new step is a challenge, every new experience is a lesson. Each individual cannot meet every challenge successfully nor learn every lesson readily. In order to achieve success he has to make changes either in the environment or in his own behavior. Quite often the nature of the objects in the environment presents a problem to the organism; while at other times, because of his own genetic characteristics, he himself is unable to attain a goal in life. He may learn his way of life through failure as well as through success. Success and failure are the two sides of the same coin, but in effect are poles apart. One produces positive affect and the other negative. The negative affect may be called

frustration. McCandless (1961, p. 425) explained the phenomenon: "frustration . . . can be thought of as an internal state resulting from or accompanying partial or complete blocking as one tries to get to a goal." And, "failure, very simply, means not getting what one is trying to get . . . or the mechanics of frustration . . . Failure, of course, is likely to produce frustration."

In this study the two terms failure and frustration are used in the sense in which McCandless has used them. Failure for the child means not succeeding in reaching a goal or solving a problem he believes he can solve and the accompanying behavior in such a situation may be thought of as his reaction to frustration.

A variety of reactions may be observed as the child faces failure. There may be as many different responses as there are different personalities. These modes of response are learned while growing up. Even in infants one can observe responses to their physical and psychological need frustrations. There are some babies who remain quiet, sucking their thumbs or lips, and who do not cry at all, even if they are hungry or left alone for quite some time. On the other hand, there are babies who scream and cry, showing sometimes quite violent reactions if they fail to get food when wanted or fail to hold the attention of an adult. As these babies grow older either they will continue to use similar responses or they will learn new and perhaps

more effective or desirable ways of behaving. The change depends upon the reinforcement they receive for each reaction.

Reinforcement or the pattern of reward and punishment is established through child-rearing practices and other experiences of infancy and childhood and through tradition, mores, etc. in later life. Child-rearing practices are different in different cultures and even in subcultures within a given culture. It may be said that psychologists were formerly chiefly interested in individual behavior and the sociologists in social forces. But now the sociologists and the psychologists both have joined forces to investigate the behavior patterns of individuals, recognizing that individuals are the products not only of genetic characteristics but also of social and cultural pressures. They have found differences in behavior between ethnic groups and also between classes of differing racial and ethnic groups within one society.

Reasons for Undertaking the Study

Despite the fact that there is much current interest in America in the development of Negro children and of children from lower socio-economic backgrounds, very little has been studied thus far in regard to the possible relationship of these factors to adaptive behavior in the face of failure, especially at the preschool ages. This may be due to the fact that it is not easy to examine reactions to

failure. Individuals tend to avoid situations in which they may fail. But young children are more expressive and spontaneous in their behavior than older children or adults. The former reflect more directly the ideas, attitudes and habits of the important adults in their lives. They are in the process of learning the modes of behavior characteristic of their particular group as transmitted to them through the immediate social environment.

Limitations of Studying Children

It must be admitted that a young child's reactions are difficult to observe and still more difficult to interpret. His perception of any situation cannot be entirely clear to the adult. Despite this limitation, it is important to observe children's reactions to failure. Another crucial point is that the level of development where a child can consciously experience failure is not precisely known. It is thought to come with the development of self-awareness and the development of the sense of autonomy: that is, between two and six years of age. Awareness of what constitutes success and anticipation of success is essential to the experience of failure. (Stanton, 1938).

Test of Failure

Reactions to failure or frustration in children have been observed and measured by a number of psychologists and researchers interested in children. One test of preschool

children's reactions to failure was developed by Dr. Mary Elizabeth Keister at the University of Iowa in 1936. One of the two tests developed by her was the "Puzzle-box Test" which is used in the present study.

This test has a number of advantages. It is designed to be administered to one subject at a time. It presents a problem which is readily comprehended, interesting and challenging to a young child. It appears to involve a simple task, one which the child clearly sees as possible to carry out successfully. The problem is in fact quite difficult even for an adult and requires that the subject work at the puzzle consistently if he is to achieve success. Success is not immediately possible although the problem appears to be extremely simple, and continued failure in solving it is clearly not the "fault" of the adult who set the task. The behavior that may be observed in the subject may be considered to be a reaction to failure, his behavior in a frustrating situation. The test permits the subject to work at the task for fifteen minutes, during which time his reactions are observed and recorded by the experimenter on a form designed for that purpose. This test to reveal a young child's reaction to failure has been frequently used over the past thirty years at the University of Iowa as one of a battery of tests given to obtain a general picture of the behavior and "adjustment" of the preschool child. The original study is cited in many textbooks and collections

of Readings in child development research. So far as is known, however, it has been used only with the usual college or university laboratory nursery school population (middle- and upper-middle-class children) and never with Negro children or with children from lower socio-economic backgrounds.

The present study is an attempt to describe the responses given to this test (responses to failure) by Negro and white preschool children from both middle and lower socio-economic groups. Negro-white, and middle-lower group differences are analyzed.

Definitions

1. The term failure is defined in the original study (Keister, 1938. p. 31) as ". . . the child's lack of immediate success following an attempt to contend with a situation that is difficult for him, the situation being one in which he sees some relation to himself as an instrument of his own success or failure."

2. Social class is a broad concept, and socio-economic class has been defined in various ways and explained in a variety of terms. For the purpose of this investigation, middle and lower class have been operationally defined using occupation, education, income and area of residence of the family. (This is explained in Chapter III.)

It should be noted that the expectation to a possible difference to be found between white and Negro children is

not based on the idea that something intrinsic in race is responsible for making them react differently to a failure situation. Rather, there is concern with the social implications of the biological factors, and the way in which these impinge on the growing child. It is possible that a Negro child in a predominantly white society may be, quite early in life, made to feel different and sometimes inferior and so may develop adaptive responses different from those developed by the white child.

Questions Which the Study Attempts to Answer

The present study attempts to describe the behavior of three- to six-year-old children when faced with a task that they are not able to carry out successfully. It involves both Negro and white children from middle and lower socio-economic groups. Specifically it seeks answers to the following questions:

1. How do children between the ages of three and six years react to a situation in which they are experiencing frustration?
2. Do Negro children regardless of class membership react differently in this situation than white children?
3. Do children from a lower socio-economic group, regardless of race membership, react differently from children who are members of a middle socio-economic group?
4. Within racial groups are there differences

between children who come from different socio-economic backgrounds?

5. Within class groups are there differences between children who come from different racial backgrounds?

CHAPTER II

REVIEW OF LITERATURE

Theories of Frustration

Freud (1930) was the first major psychologist who formulated a theory of frustration and gave it a place in his system of thought. He introduced the concept of "cultural-frustration," that is, that a person would become neurotic if he could not tolerate the amount of frustration imposed upon him by the cultural ideals of the society, and that the reduction of those demands would result in the possibility of happiness. The pleasure-pain principle is also one of the theories presented by Freud (1935). That is, in human beings there is a tendency to seek pleasure and avoid pain which serves as a basic mechanism of all mental functioning; and that, whenever this kind of behavior is obstructed, the individual experiences frustration.

Dollard and his associates (1939, p. 7) formulated a theory based on Freud's pleasure-pain principle: "An interference with the occurrence of an instigated goal-response at its proper time in the behavior sequence is called frustration." Later they revised their theory by stating: "Frustration produces instigations to a number of different types of response, one of which is an instigation to some

form of aggression" (Miller, 1941, p. 338). They explained that if instigation to other responses, which are incompatible to aggression, is stronger than the instigation to aggression, the latter response would be extinguished and the instigation to aggression would eventually be dominant. Since, the expression of aggression is not socially accepted, aggression may not be overt in every case. It may manifest itself in dreams, fantasy, or through any other medium of expression, such as writing, drawing, painting, etc.

Rosenzweig (1944) has presented an overall theory of frustration. His theory comprises four parts: (a) definition, (b) types of stress, (c) reaction to frustration, and (d) frustration tolerance. Rosenzweig (1944, p. 380) defined frustration as something which "occurs whenever the organism meets a more or less insurmountable obstruction in its route to the satisfaction of any vital need." He referred to the stimulus situation as "stress" and the accompanying state of the organism as "tension." He classified frustration into primary frustration (that is, sheer existence of an active need) and secondary frustration (an obstacle in the path to the goal of the active need.) He described three characteristic patterns of reaction to frustration: (a) extrapunitive--lashing out immediately at the people in the outside world; (b) intrapunitive--blaming himself; (c) impunitive--trying to solve the problem constructively. Frustration tolerance was defined by

Rosenzweig (1944, p. 387) as "an individual's capacity to withstand frustration without failure of psychological adjustment or to delay gratification. It implies some type of inhibitory process--a capacity to sustain tension and to withhold discharge." He also suggested that earlier frustrations not only set the pattern for reactions to later situations, but also modify the individual's capacity to respond adequately.

Studies Which Have Tested Theories of Frustration

A number of studies have been carried out to test the frustration-aggression hypothesis. Burton (1942) observed aggression in young children while he was conducting an experiment to determine the influence of social stimulation in reducing the persistence of satiation. In addition, his report provided a description of certain qualitative aspects of the satiation process. The assumption was that satiation is frustrating. Twenty four preschool children were satiated by the task of repeatedly inserting colored pegs in a specially designed peg-board until rejection and non-resumption of the task occurred. It was hypothesized that (a) the greater the instigation to the frustrated response (i.e., the greater the satiation or the demands to continue at the task), the more intense the frustration; and (b) the greater the duration of the instigation to the frustrated response, (i.e., the time spent in the restraining situation, with or without insertions), the more intense the

frustration. Each subject worked alone, following introduction to the task by experimenter, and was observed unknown. The criterion of satiation was: (a) leaving the room, counter to E's orders; (b) being totally inactive for at least 10 minutes; (c) being sufficiently aroused emotionally to force termination of the session. When a child was judged as satiated, another child of the same sex and age was introduced in the situation. Aggression was measured by the S's reaction to the other child, physically or verbally, and toward the objects. Aggression was observed in the satiated children. The author concluded that the situation of the satiated child conformed adequately to the Dollard's definition that the satiated child wanted to get away from the situation but could not do so and would get frustrated. Severe degrees of satiation induced frustration which led to aggression in a variety of forms.

Using preschool children as subjects, Yarrow (1948) investigated the effects on projective doll play of antecedent frustration. Subjects were 60 preschool children of 3-0 to 5-7 years of age. The Ss were randomly assigned to three groups: control, failure, and satiation. The failure condition was created by asking the children to make a tinker-toy windmill, which appeared very simple but was difficult to construct. Further failure stimulation was provided by E's remarks that the child has failed in

doing so while other children had succeeded. The satiation situation was similar to that of Burton's experiment (inserting pegs until rejection and non-assumption of the task occurred.) Children remained in each situation for 20 to 30 minutes. A doll play session after the frustration period was designed to observe the later effects of frustration. Behavior was recorded every 15 seconds in terms of one of the categories presented below:

1. Routine thematic: all thematic action or verbalized fantasy with the dolls or material appropriate to the time, place, situations, and characters present.

2. Individualized thematic: all thematic actions representing situations outside of the routines.

3. Inappropriate thematic: all thematic actions inappropriate to the situation.

4. Organization: all purposeful or systematic arranging of materials and verbalizations.

5. Exploratory: activity directed toward familiarizing with the situation at the beginning of the session.

6. Tangential: all behavior not directly related to the experimental situation.

7. Tangential Play: nonthematic behavior utilizing the toys and random manipulation of the materials.

8. Aggression: all behavior involving injury or deprecation of an object or person, expressed directly by the child or through the medium of the dolls. Aggression

was further qualified as stereotyped, non-stereotyped or tangential according to the following definitions: (a) stereotyped aggression: any form of aggressive behavior which may actually occur in the common middle class home situation--assertive actions or verbalizations appropriate to time, place, and characters; (b) non-stereotyped aggression: distinguished by intensity, inappropriateness or individualistic quality; and (c) tangential aggression: any aggression occurring during tangential behavior or tangential play.

Changes in doll play behavior between first and second sessions were noted. In the failure group a significant increase in total aggression, non-stereotyped and tangential aggression was observed. A significant decrease in latency of aggression and routine thematic behavior was found. In the satiation group, there was a significant increase in total aggression, non-stereotyped aggression, tangential aggression, inappropriate thematic behavior or tangential behavior, and individualized thematic behavior, along with a significant decrease in latency of aggression and routine thematic behavior.

The experimenter concluded that the antecedent frustration tended to result in increased aggressive play, increased tangential behavior and play showing regressive characteristics. In addition, many of the commonly observed effects of frustration on overt behavior were found in doll

play behavior.

Another approach to the theory of frustration involves a "frustration-regression" hypothesis. The concept of regression is also originally Freud's. He used the term for various types of behavior (crying and bed-wetting, for example, are regressive behavior) that go back to a period which an individual has already passed in the process of development. Barker, Dembo, and Lewin (1941) used the term regression as "a negative development," caused by a state of blocked tension, as well as by frustration which may be caused temporarily by fatigue, over-satiation, and sickness. Therefore, it may be considered a common phenomenon which is related to many situations and problems, and which concerns the total behavior of the person rather fundamentally. These researchers designed some experiments through which they offered additional proof of the fact that in a state of high tension the action toward an obstructed goal regresses to primitive level and also attempted to prove that high tension leads to regression which shows itself in the action toward the inaccessible goal as well as in behavior which is not related to this goal.

The subjects in the experiment were 30 children between 2 and 5 years of age, from the preschool laboratories of the Iowa Child Welfare Research Station. The frustration experiment was divided into three periods--prefrustration, frustration, and postfrustration. Before

the actual experiment started the child was led to play in a free play situation with standardized play materials incorporated into an elaborate and attractive play situation. Each child was left entirely free to explore and play as he wished. The transition from prefrustration to frustration period was made by the experimenter through collecting all the toys used in the free play experiment, placing them in another part of the room and lowering a wired screen on the more attractive scene, thus separating that side of the room from the child. The part of the room with toys was physically inaccessible but visible. The child was left entirely free to play as he desired. Half an hour after lowering the partition, the child was asked to leave the room. When he was ready to leave, the partition was lifted. This post-frustration period was created just to satisfy the desire of the child to play with the new toys, and to avoid undesirable after-effects. Both the free play situation and the frustration situation produced two general kinds of behavior: (a) activities in the direction of inaccessible toys, which included physical approaches, social requests, and looking at, or talking about those toys; and (b) free activities and talking to the experimenter. When constructiveness of play in the free play situation and the frustration situation were analyzed, the results showed that frustration not only affected actions related to the inaccessible goal but it also affected behavior in other

situations. Subjects showed a decrease in the happiness of the mood, an increase in aggression.

A replication of the Barker, Dembo and Lewin experiment was carried out by Block and Martin (1955). The specific hypotheses were: (a) under-controlling children would evidence greater discernment in their level of play constructiveness following frustration, and (b) under-controlling children would make direct attacks on the frustrating barrier to a greater extent than over-controlling children. (Over-controlling meant: "binding their tensions excessively"; under-controlling: "not binding sufficiently"; and appropriate-controlling: "selective binding and discharge depending upon the situation.") These hypotheses were based on the assumption that children learn in the family context how to handle their conflicts, anxieties, and the demands made upon them by the external world. The aim of the study was to probe into the problem of individual differences in the tendency to differentiate under frustration. The subjects were 22 preschool children ranging in age from 28 to 51 months. It was a highly selected and culturally homogenous group. The findings supported both the hypotheses.

To test the frustration-regression hypothesis, Thomas (1951), investigated the effects of frustration on children's painting. The specific purpose of the study was to determine whether nursery school-age children paint

pictures at a lower developmental level following a frustrating situation than they do following a nonfrustrating or less frustrating situation. Subjects were 40 children 2-0 to 4-10 years of age. The experimenter presented the toys to one child at a time, and an observer recorded actions and conversations. The experiment was made up of three situations: (a) nonfrustrating play situation A, followed by painting situation A and then a five-minute recess; (b) frustrating play situation B, followed by painting situation B, and a five-minute recess; and (c) nonfrustrating play situation C and the painting situation C (arranged to avoid the ill after-effects of frustration). The test items and the administration were similar to those in Barker, Dembo and Lewin's study (1941), where frustration was convincingly established in nursery school children. The results showed no regression in the use of color or form after children were frustrated. This was contrary to the results found in the earlier experiments. The author suggested that individuals are capable of a variety of adjustment mechanisms by which they handle frustration and that a range of types of reactions in a group might be expected more often than one type (regression) alone.

Other Relevant Studies of Children's Behavior in Frustrating Situations

One of the studies most often referred to in the literature is that carried out by Keister (1938). The first

purpose of the study was to devise tests to discover the kinds of responses a preschool child would give in face of failure. The second aim was to discover whether a group of children who on testing showed undesirable or "immature" responses in the face of failure, could be trained to make more desirable responses to a similar situation. Keister (1937, p. 31) defined failure as: "the child's lack of immediate success following an attempt to contend with a situation that is difficult for him, the situation being one in which he sees some relation to himself as an instrument of his own success or failure," and the term maturity as: "grown-up-ness, not primarily in the sense of what older children or adults do, but of how objective, well-adjusted individuals ordinarily react in situations that are difficult for them. An immature response is a type of reaction to difficulty which is characterized by a lack of this controlled adult behavior and which shows that the individual is not assuming responsibility for his own actions. He may evade the issue, expect another person to do the task for him, blame someone or something else, or excuse his own part in the difficulty, all of which have been considered marks of a poorly adjusted individual."

Two experimental test situations were devised to conform to the following criteria:

1. It must be possible of accomplishment but not immediately.

2. It must provide a situation that is natural in the sense that the difficulty is not imposed obviously.

3. It must provide a situation which is simple and an average child could see that he has failed, and it is his own fault.

4. The situation must not look like a "test" for which he is obliged to work. He should feel free to make no response if he so desires.

5. It must be a task which would interest most children of preschool age.

The two tests used were "the puzzle-box test" and "the weighted-box test." (The same puzzle-box test was used in the present study.)

The subjects were 82 children enrolled in the preschool laboratories of the Iowa Child Welfare Research Station. The age range of the group was from 3-2 to 5-11 years. The children were American born whites and from families of the professional group. The time allowed to work with the puzzle-box test was 15 minutes and with the weighted-box test, 10 minutes. A variety of reactions to failure were recorded, such as continuing to work at the task, seeking help, destructive behavior, rationalization, emotional expressions, motor manifestations of anger, etc. The latter were responses which may indicate frustration when one is not successful in the given situation. Attempts to solve alone were the most frequently observed

responses. Eighteen per cent of the 82 subjects gave "immature" responses as defined in the study.

The second part of the study involved a training program for those children who had given "immature" responses in the test situation. The philosophy underlying the training program asserted that a child can learn to meet failure in an acceptable and controlled manner if he knows from experience what kind of behavior is likely to bring success or satisfaction. The training program started with very simple tasks which progressively became more difficult. The child's efforts were encouraged and rewarded by praise and appreciation. Behavior changes were expressed both qualitatively and quantitatively. In order to see whether the children had improved their behavior responses through training, they were retested using a different form of the original puzzle-box test. The carry-over of the training to a new situation showed strikingly in the retest results. The most important contribution of the study was to show that changes can be observed in the behavior of children in failure following an appropriately designed training program.

The study by Keister (1937) was followed by a series of studies at the University of Iowa dealing with the reactions of preschool children in difficult situations. Of the two experimental test situations, the puzzle-box test has been considered preferable and has been used in further experimentation. Witz (1945) has referred to five other

researchers who utilized the Keister "failure test." The purpose of the study by Witz was further to refine and develop the Keister test. She was particularly interested in establishing norms for the test, determining the reliability of the test, experimenting with the test and retest procedure in order to determine its possibilities for use in studying the effect of training or of environmental modifications, and to compare the reactions of subjects at the three and four year age levels. The subjects of her study were 105 preschool children between three and four years of age enrolled in the Preschool Laboratories of the Iowa Child Welfare Research Station and in the Nursery School of the University of Chicago. Witz concluded that norms could not be established by her study but that study had contributed in a large degree to the refinement and development of the Keister Puzzle-Box Test for measuring the reactions of children when faced with a difficult situation.

The most recent replication of the Keister Puzzle-Box Test using preschool-age subjects was the experiment by Zunich (1964). He was interested in obtaining a better picture of age and sex differences in performance on the puzzle-box test. Forty preschool children (20 male and 20 female), between the ages of 3 and 5 years, from white middle-class families were tested. The categories of responses measured were: (a) attempt to solve alone,

(b) destructive behavior, (c) directing the experimenter, (d) emotional response, (e) facial expressions, (f) motor manifestations, (g) no attempt to solve, (h) rationalization, (i) seeking attention, (j) seeking contact, (k) seeking help, (l) seeking information. The results showed the majority of subjects "attempted to solve alone." "Emotional responses," "facial expressions," and "seeking information" were the next most frequent responses. At the four-year-old level more "rationalizing" behavior and more "facial expressions" were recorded, than at the three-year-old level. Significantly greater numbers of "destructive behavior," "emotional response," "facial expression," "rationalizing" and "seeking help" behavior was noted among boys. More girls attempted to solve the test alone, and seeking contact and seeking information was also higher among girls than among boys.

A study relating different motivational systems to different reactions to frustration was carried out by Otis and McCandless (1955). The purpose of the study was to investigate the problem of the conditions under which one set of responses to frustration rather than another can be predicted to occur and vary during frustration. An attempt was made to classify children in terms of the strengths of two different social needs, on the assumption that these provide different motivational systems for reactions to frustration. The needs they defined were "power-dominance"

and "love-affection." Sixty-three children in the age range 41 to 65 months, enrolled in the Preschool Laboratories of the Iowa Child Welfare Research Station, served as subjects for the study. The children were rated by pairs of teachers for the above-mentioned traits. The ratings were compared with each other and also with ratings made by two pairs of clinical psychologists from Children's Apperception Test (CAT) protocols.

To produce repeated frustration, the experimenters used "blocking techniques." These consisted of having the experimenter start to push a car from one side of the block-constructed road and the subject from the other. When E's car meets S's car in the middle of this road, that crash produces frustration. Eight repetitions of the situation were made. Hypotheses suggested were: (a) aggressive responses will increase during frustration; (b) submissive responses will decrease; (c) children high in power-dominance need will show more aggression; (d) love-affection needs will be positively correlated to submission scores.

The hypotheses were supported by the findings, and love-affection need and power-dominance need were found to be negatively correlated. The children who had attended a permissive preschool for a longer time showed more aggression and lower submission, compared to those who were new in the situation.

Relevant Studies Involving Race As a Variable

In the 1930's, studies began to appear which involved continuing observation of the total behavior pattern of the Negro population in a given community. These studies provided a theoretical background for the possible varieties of Negro behavior.

Dollard (1937) conducted a study in a southern town. He did not employ "scientific" methods of research, but by virtue of living there, maintaining contacts with the people, and through indirect queries he collected a vast amount of material about Negro patterns of living in this community. On the basis of his observations he remarked that Negroes would perceive the caste and class distinctions as a "chronic" frustration situation, and that aggression could be expected from them in return. Dollard (1937, p. 252) predicted five possible reactions to such frustration on the part of the Negroes: (a) that they become overtly aggressive; (b) that they suppress their aggression; (c) that they turn their aggression from whites to their own race; (d) that they give up the competition with the whites as lower class Negroes have done; and (e) that they compete for the values of the white society, raise their class position within the Negro caste, and manage aggression partly by expressing dominance within their own group, and partly by sheer suppression of the impulse (the solution characteristic of the Negro middle class).

Although Dollard did not make a special study of Negro children, he concluded that even small children experience frustration in connection with their simple needs or with all the limitations placed on their freedom, as for example in weaning or cleanliness training and in prohibitions on running, walking, talking, etc. He also added that the character of a grown-up person reflects these frustrations and his reactions to them.

Dreger and Miller (1960) reviewed the published studies dealing with Negro-white comparisons during the period 1943-1958. They tried to confine themselves to the experimental literature only, but on such subjects as attitudes, values and emotional disturbances, they departed from the rule. Some of the studies showed differences in psychophysical and psychomotor functions which may not be accounted for by differential environmental conditions. In the area of intelligence, infant and young child comparisons suggested similarities between Negro and whites. For instance, some experiments conducted by Gililand (1951) with both Negro and white infants, some as old as 13 months and some as young as 4 weeks showed a high mean I.Q. for the Negro children than for the whites, though the differences were not statistically significant. In personality studies (using Rorschach, Thematic Apperception Test, and Picture Frustration Tests) differences were found between Negroes and whites. But the evidence was insufficient to determine

the relative contributions of genetic constitution and experience. The authors concluded that (a) there were still wide differences between Negroes and whites in many areas of psychological functioning, and (b) a number of differences attributed to heredity in the past, have been shown to be the result of social class determination.

One of the most recent publications on the subject of American Negro personality is A Profile of the Negro American (Pettigrew, 1964) that contains information from various studies and experiments. One of the questions the author tried to answer was, "How do American Negroes react to oppression?" There were a variety of responses which could be subsumed under three categories: (a) moving toward--that is, seeking full acceptance as an equal human being; (b) moving against--aggressive reactions; (c) moving away--avoidance reactions.

The first category included responses ranging from special vigilance as to how white people behave to enhanced efforts to acquire that standard of behavior. This sensitivity was observed among Negro children of school age. Such heightened vigilance and sensitivity were often accompanied by anxiety, hyperactivity, and sometimes mild dissociations. Lower class Negro children of school age were said to "give up the fight" for status. Studies revealed unusually low need for achievement in this group. On the other hand, upper status Negro youth had intense need for

achievement and high levels of aspiration. Middle class Negroes typically found themselves squeezed between several conflicting pressures toward and away from the oppressor.

As to the second variety of responses mentioned above, the potential aggression created by the frustrating life situation of the Negro was often displaced. This was illustrated by an experiment carried out by Hammer (1953) in which Negro and white children were compared on free hand drawings of House, Tree, and Person (H-T-P, a projective test). The test was administered to 148 Negro children from grades one to eight in a semi-urban, semi-rural school in Virginia. Their performance was compared to that of 252 white children from grades one to eight of a companion white school in the community. The drawings were judged by three clinicians. The assumption was made that the Negro child suffers more frustration than the white child, as defined by criteria of deprivation and personality threat. In this study the hypothesis was supported by the findings: (a) the mean aggression and hostility ratings earned by the drawings of white children was significantly lower than that of the Negro children; and (b) the drawings of the Negro children suggested greater feelings of frustration produced by a restraining environment, with concomitant feelings of hostility and a desire to react aggressively. An interesting allusion was made to the fact that Negro children often engage in a ritualistic game of abusive

insults called "playing the dozens." In this game a group of children start throwing insults and base remarks onto one child for a long time to see how much he can tolerate. Such a game was viewed as a preparation for controlling aggressive impulses.

The third type of reaction to oppression described in Pettigrew--moving away or withdrawal--was shown in interviews, projective tests, and questionnaire data. The study conducted by Goff (1949) was an investigation into the problems, fears, annoyances, frustrations, and other emotional difficulties common to Negro children because of the fact that they were Negroes. Information about the following related matters was also sought: the influence of these experiences on feeling tones, inner impulses, and overt responses; the kinds of guidance given by parents and the effectiveness of the guidance; and the attitudes of parents toward certain existing social conditions which might influence the kind of guidance given. The subjects were 75 girls and 75 boys, ranging in age from 10 to 12 years, representing contrasting socio-economic levels and living in two different parts of the country, New York City and St. Louis. Parents and children were both interviewed to obtain the information mentioned above. The impulse to strike back was overwhelmingly reported by children, but this reaction was usually concealed by adherence to social expectancies, and the most prevalent response was

withdrawal. Goff concluded that fear could be the cause of an individual child's withdrawal from a situation, and that suppressed hostility may find expression later in group action.

Morland (1963) summarized the research by psychologists, sociologists, and anthropologists on race awareness in young children of both racially segregated and integrated communities. The literature seemed to show that racial bias develops very early in the life of an American child, because social prejudice is in the air of the American society and the child tends to "absorb" it. Morland asserted that when white children realized their advantageous position in society in comparison to that of Negroes, they were likely to develop positive attitudes toward being white and negative attitudes toward Negroes. In the same vein, Negro children were apt to develop a negative attitude toward their own race.

Horowitz (1939) reported a study of children's emergent awareness of themselves with reference to Negroes as a specific group. Two types of tests were used: (a) choice tests relating to group identification in which the subjects were asked to identify themselves and their siblings with photographs and line drawings; and (b) a portrait series in which subjects were shown ten portrait pictures and were asked the question, "Is this you?" Twenty-four children of both sexes and both races, ranging in age from

2-3 to 5-1 years were tested. The Negro children made more correct identification in the choice situation than in the portrait series. They gave evidence of knowing the differences between white and Negro. However, where they were free to make choice (the portrait series), they identified themselves with the white photographs. In the opinion of the author, the discrepancy between knowing one's own color preference, was too great to be ignored.

Goodman (1952) designed a study to reveal early race awareness, race attitudes, and the personal and social contexts in which these develop. Four-year-old nursery school children (57 Negroes and 40 whites) served as subjects. Their parents were from varied backgrounds, ranging from professional to unemployed, ill, older people. The data were gathered through (a) non-participant observation; (b) participant observation; (c) interviewing mothers; (d) testing; (e) access to school records and incidental assistance from the school staff. Having built acquaintance and friendly relations with the children, the experimenter invited them, one at a time, to "play with some new things." Four sets of projective materials were used for testing: (a) a set of jigsaw puzzles; (b) a doll house with its furnishings and miniature doll families; (c) a set of pictures; and (d) a collection of dolls of several types. These materials were used because they were suited to the interests and capacities of four-year-olds, and because

they tended to stimulate verbal and motor behavior which would give clues to the children's race awareness and their orientation toward racial attributes and differences. The findings showed highly developed awareness of and feelings about skin, hair, and eye color. Different values and attitudes toward people were present among all the children tested. White children were found to take their own complexion for granted and to look at other children as "colored." The author concluded that while the study did not establish the existence of significant personality differences between the members of the two racial groups, it did suggest that such differences may exist.

Stevenson and Stewart (1958) studied children's racial awareness using a series of tests involving discrimination of physical differences between Negroes and whites, and attitudes towards race. The tests were presented to 125 white and 100 Negro children between 3 and 7 years of age. Ss were tested individually at the school, by an experimenter of the same race. The three-year-olds had some difficulty in discriminating, but as age increased, discrimination improved. This study suggested that white Ss tended to develop awareness at a younger age than Negro subjects. Negro Ss had lower frequency of own-race choices and assigned negative roles to Negro children more frequently than white Ss did to white children.

The various studies reviewed above and the speculations

made by eminent psychologists and sociologists, strengthened the writer's interest in testing preschool age children of different ethnic groups to determine whether differences may be observed in their reactions to a frustrating situation.

Relevant Studies of Social Class Differences

Another variable relevant to the present study is social class. Behavior patterns, especially in young children, are thought to be direct products of family interaction. The first interpersonal contacts a child has are between himself and his family. The way the child is treated, the way the family transmits its values and attitudes and those of the culture, has been thought to be related to the adaptive behavior of the child. The present study is concerned with how children from middle class backgrounds behave in the face of a problem, as compared to children from lower class backgrounds. A look at child-rearing practices in both classes would thus seem to be relevant.

The study by Davis and Havighurst (1946) has become a classic in this regard. This work was primarily concerned with the cultural determinants of personality. The authors (1946, p. 699) stated, ". . . the pivotal meaning of social class to students of human development is that it defines and systematizes different learning environments for

children of different classes." The purpose of the study was to determine the extent to which the methods, the timing, and the pace of child training in the early years differed in the various social classes. Subjects were 200 mothers (50 Negro middle class, 50 Negro lower class, 48 white middle class, and 52 white lower class) living in Chicago. The middle class group tended to be upper-middle and the lower class was definitely upper-lower. Median ages of their children were: for middle class, 4 years, and for lower class, 6 years. Guided interviews were conducted with the mothers according to a set schedule. Significant differences in child rearing were found between middle and lower class regardless of color. Middle class parents were more rigorous in their training of children for feeding and cleanliness habits and for taking responsibility than were lower class parents. Middle class children were subjected earlier and more consistently to the type of training which makes a child an orderly, conscientious, responsible and "tame" person. The authors speculated that during the course of that training children might suffer frustration and that perhaps thumbsucking (which was found equally frequently in Negro and white middle class children) was a response to such frustration. Masturbation was much more common in the middle class in general and this was seen by the authors also as a response to frustration. Middle class parents expected their children to assume

responsibility earlier than did lower class parents. Negro mothers were more permissive in feeding and weaning, but more rigorous in toilet-training than were white mothers. Negroes of both classes gave their girls early training in responsibility. Some individual personality differences were also observed.

Ericson (1946) reported separately the data on the white groups of subjects of the Davis and Havighurst study. Her findings were: (a) middle class families were generally more exacting in expectations from their children than were lower class families; (b) middle class children were weaned earlier from breast and bottle than were lower class children, with three times as many thumbsuckers among middle class children as among lower class; (c) middle class mothers started cleanliness training earlier than did lower class mothers. From these findings Ericson concluded that middle class children were probably more frustrated and more anxious than were lower class children.

Sears, Maccoby and Levin (1957) conducted an extensive study with 379 American mothers living in Boston, to find out how they brought up their children from birth to kindergarten age. The study was designed to answer three questions: (a) how do parents rear children? (b) what effects do different kinds of training have on children? and (c) what leads a mother to use one method rather than another? In order to discover on which dimensions of child rearing,

if any, differences might be found associated with socio-economic status, they divided the cases into two subgroups: "middle class" and "working class." The middle class group included primarily business and professional occupations together with other white-collar occupations, such as salesmen and clerical workers. The working class group was composed primarily of blue-collar workers, ranging from unskilled laborers to self-employed plumbers and carpenters, the largest number being relatively skilled workers who were not self-employed. In addition, the working-class group included gas station attendants, policemen and firemen, ticket agents, butchers, bartenders, etc.

The authors concluded from lengthy interviews with the mothers that: (a) the middle class mothers were more permissive in practices such as feeding, toilet training, dependency, sex training, restrictions and demands, achievement pressures and standards, and aggression, than were the working class mothers; (b) middle class mothers were less object-oriented in their punishment techniques and less restrictive about vigorous activity in the home and free-ranging exploration out of it than were working class mothers; (c) middle class mothers were warmer toward their children, more comfortable with themselves and had more meaningful relationship with their husbands so far as child rearing was concerned.

Havighurst and Davis (1955) compared their 1946 study

with findings of the Harvard group (Maccoby, Gibbs, et al., 1954). The points of agreement between the studies were: (a) lower class was more severe in punishment in toilet training; (b) middle class had higher educational expectations of their children; (c) no class differences were found in display of aggression by children in the home; (d) middle class children were allowed more freedom of movement away from home during the day; and (d) methods of interviewing were almost the same. The two samples, however, were not comparable. The Chicago group was interested in studying individual differences in personality among children in a family and relating the differences to children's experiences in family. Their 200 families were not a representative social class sample comparable to the Boston group which was a representative sample. Nationality backgrounds within the two samples were different. The Boston lower status parents were higher in status than those in the Chicago sample. Differences in the findings may be explained also by the fact that the mothers in the Boston sample may have given the "expected" or "appropriate" answers. Middle class mothers may be defensive about their severity and so claim to be less punitive, whereas lower class mothers may be defensive about their children being dirty and violent and so claim to be more punitive with their children for soiling and fighting. Child rearing ideology has changed since 1943 and this may also have been responsible for the

differences found in the two studies. Further, differences in interpretation of the statements of the mothers may also account for the differences in findings between the two studies.

Miller and Swanson (1960) carried out an investigation based on the assumption that people differ markedly in their reactions to failure because of contrasting standards present in the society and also because of differences in methods of solving problems. The primary purpose of the project was to test a number of hypotheses about the social origins and the child rearing practices that predispose children to favor particular methods of resolving conflicts.

Although their subjects were 112 boys enrolled in 7th, 8th, and 9th grades, their findings have an important bearing on the present study. Two general sources of the subjects' experiences were investigated: (a) social class and (b) the method of child rearing used by their parents, to show how they may be related to each other and to the resolution of conflict. Social class was determined by an index developed by Hollingshead (1958) using occupation, education, and income as determining factors. The authors were interested in the relation between social class, discipline, and directness of aggression. For this particular problem, a projective test was used involving the completion of a group of stories. Although the control of direct aggression was approved by middle class society,

working class people had less to gain from self-control and sacrifice; aggression, however, was subject to considerable socialization in all segments of the society. Discipline-- defined as corporal methods, such as spanking or slapping; harsh verbal techniques, such as scolding, threatening, and yelling; restriction of privileges, such as time allowed for television or the child's allowance; or psychological discipline, such as shaming and appeals to guilt-- was found significantly associated with the directness of expression of aggression, but social class was not. While, the total range of aggression expressed in the story completion was not related to socio-economic status, the most direct forms--attack and fright--were significantly related to class or were close to significance. The directness with which aggression was expressed was significantly related to discipline employed in the home. The authors remarked that the concept of social class was a collective one involving many component forces, and that it was apparently a touchstone to many sources of reaction to conflict.

McKee and Leader (1955) conducted an experiment with preschool children to find the relationship of socio-economic status and aggression to competitive behavior and to determine the relationship between competition and aggression. They hypothesized that competitive behavior will appear earlier and be more intense among children from

lower socio-economic origins. One hundred and twelve children of three and four years of age served as subjects. They were divided equally into two groups as to age, sex and socio-economic status.

Two children of the same age, sex, and socio-economic status were observed simultaneously for six minutes. They were asked to build something with a pile of small red and yellow toy construction bricks. Overt behavior and verbalization was recorded. The written protocol was rated on a four-point scale for both aggression and competition by two independent judges. More competition among pairs of children from lower socio-economic levels was found than among those from the higher group. Aggression was also more common among the children of lower social levels than among children of higher levels. More competition among older children of the group was found than among the younger ones, and more among boys than girls. The writers suggested that either lower class parents encourage competition or there is less parental supervision in that group.

Summary

The research studies and the experiments carried out over the last thirty years have offered a basic understanding of the nature of frustration and of how young children behave under frustration. The studies seem to indicate that people from different ethnic groups and different class backgrounds tend to behave differently due to

their particular positions in the society. A number of studies have revealed that children, even at the preschool age, are aware of differences, not only of physical appearances, but also of feelings and attitudes toward certain groups of people.

There still remains a need to investigate further the adaptive behavior, especially the behavior, of young Negro children and of all children from lower socio-economic backgrounds. The studies which have involved preschool children as subjects have used almost exclusively samples drawn from white middle class families, children enrolled in university laboratories , nurseries and kindergartens. The present study uses preschool children from lower as well as middle class backgrounds, from Negro as well as white families, attending day care centers. It attempts to describe the behavior of these children in a situation in which they are experiencing frustration.

CHAPTER III

PROCEDURE

Subjects

Since the purpose of the study was to observe the reactions to failure of children in both Negro and white groups and from middle and lower class backgrounds, the subjects were selected to be representative of these four groups. Five day care centers in Greensboro, North Carolina, enrolling children between three and six years of age furnished the subjects for the study.

After sending introductory letters to the directors of each of the centers and obtaining permission to carry out the study, the investigator visited each school, explained more fully the purpose of the study and the procedure and obtained information about the family background of each child. Information was collected as follows: (a) name and age of the child; (b) the number of children in the family; (c) parents' marital status -- whether living together or separated; (d) occupation, education and income of the father; (e) occupation, education and income of the mother; and (f) address of the family.

These data on family background were transferred to individual cards for each child and were given to two judges

who worked independently to classify them into lower and middle class. (See copy of record form, Appendix A.) The judges were professional persons who were currently working on a county-wide survey of patterns of daytime care of children under three years of age in Guilford County, North Carolina.

The judges classified the children into middle and lower class groups using the composite information on occupation, education, income, and residential area as social class indices as proposed by Hollingshead (1958). Subjects were included in the classification of "lower class" when family background information included the following:

- (a) total family income (annual): \$4200. or lower;
- (b) maximum years schooling (either or both parents):
10 years or less;
- (c) occupational group (as listed in 1960 Census of Population): unskilled or semi-skilled
operatives or workers;
- (d) area of residence: low income public housing
development or known to be transitional or
deteriorating.*

In those instances where all of the above information was not available on the subject, or where the information was not clear-cut (i.e., overlapped middle class criteria),

*Known to the judges who were familiar with all areas of the city through recent involvement in the survey mentioned above.

greater weight was given to the status of the parents' occupations, to area of residence (which was known for all subjects) and to the fact of the child's home being either "intact" or "broken," the assumption being made that one-parent households were more likely to be found in lower class than in middle class backgrounds. All subjects that were not classified in the lower socio-economic groups automatically fell into the middle class. Overall agreement between the judges was 90 per cent. Only those subjects on whom there was 100 per cent agreement between the two judges were retained in the study. The subjects thus finally selected are shown in Table 1.

Ages of Subjects

The ages of subjects ranged from 36 months to 71 months, with a mean of 54.9 months and Standard Deviation of 9.3 months for the total group of 114 children. The age distribution of subjects for the total group and the various sub-groups is shown in Table 2.

The Test

The test used to measure the subjects' reactions to failure was the "Puzzle-box Test," a copy of the test developed by Keister (1937). The apparatus consisted of a metal box painted green, 9" x 9" square, with a hinged lid which lay just on top of the contents. It was so constructed that on the inside it was only one-fourth inch deep. The

TABLE 1

DISTRIBUTION OF SUBJECTS ACCORDING TO
RACE AND CLASS MEMBERSHIP AND DAY CARE CENTER

Center	Race		Class	
	Negro	White	Lower	Middle
Metropolitan Day Nursery	35	--	25	10
Central Nursery and Kindergarten	--	2 (23)*	2	(23)*
Bennett College Children's House	27	--	--	27
Council House Day Care Center	4	17	21	--
Hester's Creative School for Children	--	29	--	29
Total, Race and Class	66	48	48	66

*These subjects were not included in the analysis as the sample of white middle class children was already sufficiently large. Also not included are subjects who either solved the puzzle within the first three minutes or walked out within the first three minutes of the test period. These children were not used as subjects and analysis of results does not include their performance.

The distribution of subjects according to race and class may be summarized as follows:

Negro, Total:	66	White, Total:	48
Lower:	29	Lower:	19
Middle:	37	Middle:	29

TABLE 2
AGES (IN MONTHS) OF SUBJECTS

Groups	Range (Months)	Mean & S. D.* (Months)	
Total Group	36 - 71	54.9	9.3
Middle Class Negro Group	36 - 68	55.1	9.3
Lower Class Negro Group	40 - 71	55.3	8.2
Middle Class White Group	37 - 71	54.4	9.8
Lower Class White Group	36 - 70	54.3	9.9

$$*S. D. = \sqrt{\frac{\sum x^2 - \frac{(\sum x)^2}{N}}{N}}. \text{ (Ray, 1962)}$$

puzzle box contained a set of ten figures cut from plywood one-fourth inch in thickness. The set of figures included a sailboat, an aeroplane, a clock, a little girl, a mitten, a fish, a bird, a duck, a rabbit, and a butterfly, all enameled in attractive colors. The problem was to place all the figures flat inside the box and close the lid. The size of the box and the shapes of the figures made the problem a difficult one even for an adult, and yet it did not appear so at first glance. When the child could not succeed in putting all the blocks back into the box where he had seen them lying a few minutes before, he could see that he was failing.

The test was administered to one child at a time. Before starting the testing, the investigator spent two days at each center getting acquainted with the children and

letting them get accustomed to her.* A good rapport was established in this way, and the children all seemed eager to go with the investigator to "play the game." No child was taken out of the group for testing before he was willing to participate. There were a few children at each school who refused to go with the researcher, and they were not tested.

The investigator took the child to a separate room and seated him opposite her at a low table. She showed him the box, saying, "I will show you what I have in this box," while opening it. Then she pressed her hand down on the toys to show that they were lying flat and commented, "See all these toys are lying flat in the box." The investigator then removed the blocks from the box and conversed with the child about the various forms. Then she said, "Now you put all the blocks back into the box and close the lid as before, and then I'll show you some more toys I have brought for you in this bag," indicating a bag which was placed in full view of the child. The bag contained two small picture books and a set of a toy car pulling a motor boat. The tester began timing the child with the help of a stop watch from the moment he placed the first block in the box. Fifteen minutes were allowed for completing the task. During the first

*Obviously this is necessary in any research project; however, it was particularly important here since the children in these centers were unaccustomed to testing procedures and since the investigator was a foreigner (Pakistani) with a manner of dress unfamiliar to the children.

minute, the tester said, "You will have to make a space for each one on the bottom of the box." During the fourth minute, she said, "You can get them all in if you try. See how quickly you can get them all in." During the tenth minute, she said, "When you get all the toys laid in and the lid locked, you will still have time to play with the toys in the bag." During the thirteenth minute, the child was warned, "There is just a little more time left for you to try, ____." If at any time during the fifteen minutes the child solved the problem (succeeded in locking the lid with all the pieces inside) he was given the toys from the bag to play with. If he was unsuccessful, at the end of the fifteenth minute the tester said, "The time is up now, ____." There is no more time for you to try to get the blocks in." She took the box and the figures from the child, saying, "You tried hard but you could not get them all in. That is all right, I will give you these picture books to look at, and I'll fix it myself." If the child had obviously not been trying hard, the tester merely said, "How would you like to play with this little toy?" She would then produce a toy from another bag.

If the child left any figures out and attempted to close the lid or merely sat holding a block, the tester said, "Now you just have to make a space for the ____." If he piled the figures on top of one another and tried to close the lid, she said, "The lid won't lock unless you fix

all the blocks in on the bottom of the box." In all cases (and particularly in cases where the child had become somewhat upset during the experimental period), the investigator carefully reestablished rapport with the child before taking him back to his group. She showed him a picture book, read him a story or talked with him for a while.

The Record

A record was made of the responses of each subject during half-minute intervals throughout the 15 minute test period. (See copy of record form, Appendix A.) Categories of behavior were adapted from those used by Zunich (1964):

- (a) Attempts to solve alone (child tries to solve puzzle on his own);
- (b) Destructive behavior (child intends to harm the object or persons connected with the difficulty; child throws the object or pushes it off the table);
- (c) Directing adult (child specifically states the course of action which he wants the adult to follow; as, "Put that part there." "Give me the red one.");
- (d) Emotional response (child cries, yells, whistles, sulks, laughs, sighs, whines);
- (e) Facial expression (child closes eyes, tightens mouth, frowns, becomes red in face, hangs out tongue, chews lips, grinds teeth);
- (f) Motor manifestations (child stamps foot, moves body, clenches fist, sucks thumb, waves with hands, pulls

on ear, scratches head, rests head on hands, holds head with hands);

(g) No attempt (child makes no attempt to solve the puzzle, gives up almost at once or without exploring many of the possibilities of solution);

(h) Rationalizes (child excuses his lack of success; "Not enough room in the box," "This is a stupid puzzle," "I don't like to do puzzles like this.");

(i) Seeks attention (child calls attention to himself or his activity; "Look what I did.");

(j) Seeks contact (child asks adult to come into physical contact with him; "Come over here and sit by me.");

(k) Seeks help, physical (child asks adult to help him out of the difficulty; "You do this for me, I can't do it.") and Seeks help, mental (child asks for ideas in trying to solve the problem; "What can I do now?" or "How can I put this in?");

(l) Seeks information (child questions in pursuit of factual knowledge; "What kind of puzzle is this?" "What is this for?" "Is this a test?");

To the above, two more categories were added by the writer:

(m) Talks to self (child addresses himself; "Duck goes here, rabbit goes there.");

(n) General impression of behavior in test situation (a subjective rating by the tester as to whether the child

was interested, indifferent, sulky, happy, or "impossible to rate mood.")

Verbal expressions were tape recorded and were later transcribed. A specimen of the subjects' verbalizations (from each sub-group) is found in Appendix B.

Reliability of Observation

Before actual testing was begun, reliability measures of observation and recording were obtained as the investigator administered practice tests to individual children in a day care center which was not included in the study sample. After each test the two observers discussed the types of behavior defined by each of the behavior categories and their accurate placement within a given time interval. Reliability was measured by calculating percentages of agreement between two observers' simultaneous and independent recording of the subject's responses during the 15 minutes of the test. When agreement between the independent observations reached .95 over a five-test interval, the actual data collection for the study began.

Scoring and Statistical Analysis

The percentage of the total test time spent in each category was calculated for each subject. Except for categories "attempts to solve alone," "rationalizing," and "seeking help," few or no responses were observed in other behavior categories (ex. "motor manifestations," or

"destructive behavior"); therefore, only the first three categories were further analyzed. Out of these three categories of behavior, "attempts to solve alone" was a positive response to the failure situation, and the other two categories were negative. These responses were not independent of each other. While the subject attempted to solve the puzzle, he also rationalized his failure and also sought help in solving the puzzle. This character of the data limited the choice of a test of significance. Nonparametric statistics was used to analyze the data.

The Mann-Whitney U Test as described by Siegel (1956) was utilized. This is one of the most powerful of the nonparametric tests, suitable to an ordinal level of measurement. The small size of the samples made it inappropriate to assume that the observations were drawn from normally distributed populations. If normality of populations was not assumed in this case, then equality of variance could not be assumed. Therefore, a parametric analysis of these data did not seem warranted.

The Mann-Whitney U Test was applied to the total group and sub-groups to find the general tendencies within each group and to quantify the differences if any between groups. The mean and the standard deviation were also computed for the groups. Comparisons were made between Negro and white, lower and middle class subjects, between older and younger groups, and between boys and girls. In addition, Negro

middle and lower class, and white middle and lower class were also compared with each other. The results are described and discussed in the following chapter.

CHAPTER IV

RESULTS AND DISCUSSION

Findings

General Findings. For the total group of 114 subjects, the range, mean, and the standard deviation of the per cent of total time spent in three behavior categories ("attempts to solve alone," "rationalizing," and "seeking help") are given in Table 3.

TABLE 3

PER CENT OF TOTAL TIME SPENT
IN THREE TYPES OF BEHAVIOR

Behavior Categories	Range	Mean	& S. D.
Attempts to Solve Alone	23.3 - 100.0	91.0	16.6
Rationalizing	00.0 - 20.0	1.9	4.2
Seeking Help	00.0 - 63.3	10.7	11.1

The majority of subjects attempted to solve the puzzle by themselves and worked throughout the whole test period of 15 minutes. The smallest proportion of time spent in working at the problem was 23.3 per cent, but many subjects worked during 100 per cent of the test period. All the children in the group attempted to solve the puzzle at least for a short while, but the wide range and the large standard

deviation show wide variability within the group.*

Of the three types of behavior, "rationalizing" was least frequent as a response to failure. For the total sample, the time spent in "rationalizing" was between zero and 20 per cent of the total time. The small mean and the small SD indicate that not many children rationalized their failure.

"Seeking help" was observed more frequently than "rationalizing." The percentage of time spent seeking help with solution of the puzzle ranged from zero to 63.3, and this wide range suggests that those who sought help did so throughout a large portion of the time.

Inspection of these data may indicate some general tendencies of children from 3 to 6 years of age in reacting to a failure situation. Most of them will work persistently on a puzzle for fifteen minutes even in the face of failure. Rationalizing may not be a common response to failure at this age-level. Seeking help could be a frequent response. They asked for help but did not stop trying to solve the puzzle themselves. Seeking help from an adult may be characteristic of preschool children.

Thirteen subjects (11.4 per cent of the total 114 subjects) succeeded in solving the puzzle either before or

*The standard deviation, like the range, is a measure of variability or dispersion. If the test scores of a distribution are widely scattered above and below the arithmetic mean of the scores, the standard deviation is large.

during the 15th minute of the test period. Six children gave up without trying any further, and walked out of the room before the end of the 15 minutes. Table 4 shows the percentage of subjects who succeeded in solving the puzzle and those who left the testing room at some time after the first seven minutes of the experiment.

It is interesting to note that the middle class white group had the highest proportion of subjects (over 17 per cent) who succeeded in solving the puzzle and that no one from that group gave up trying and walked out. In the lower class Negro group about 7 per cent of subjects succeeded and the same proportion left before the test period was over. The differences in this behavior between the various sub-groups were not very great, however, and it is difficult to see any pattern or consistency within or between sub-groups.

Findings - "Attempts to Solve Alone." Table 5 shows the total group and the sub-group results for the category "attempts to solve alone."

The total group of subjects was first divided into two age groups: older and younger. The younger group (N=53) was 36-54 months of age, and the older (N=61) 55-71 months. Comparison A shows the performance of the older and younger groups. This is the only comparison in the category "attempts to solve alone" where a significant difference was observed. The older group spent more time in

TABLE 4

PERCENTAGE DISTRIBUTION OF SUBJECTS WHO SUCCEEDED IN SOLVING THE PUZZLE
AND SUBJECTS WHO WALKED OUT SOMETIME AFTER SEVEN MINUTES OF TEST

Subjects	Middle Class Negro (N=37)		Lower Class Negro (N=29)		Middle Class White (N=29)		Lower Class White (N=19)		Percent of Total Sample 114 Subjects	
	N	Percent	N	Percent	N	Percent	N	Percent	N	Percent
Succeeded in Solving Puzzle	4	10.8	2	6.8	5	17.2	2	10.5	13	11.4
Walked out Before End of Test Time	3	8.1	2	6.8	0	0	1	5.2	6	5.2

TABLE 5

PERCENT OF TOTAL TEST TIME SPENT IN
"ATTEMPTS TO SOLVE ALONE"

Groups Compared		Range	Mean	S.D.	Z Scores* on U Test
A.	Younger Group (N=53)	26.6-100.0	88.6	17.9	2.09
	Older Group (N=61)	23.3-100.0	93.2	15.0	P .0183 < .05**
B.	Girls (N=54)	26.6-100.0	93.3	14.1	.81
	Boys (N=60)	23.3-100.0	88.9	18.2	P .2090 > .05
C.	White (N=48)	26.6-100.0	92.9	14.7	.54
	Negro (N=66)	23.3-100.0	89.6	17.7	P .2946 > .05
D.	Middle Class (N=66)	50.0-100.0	93.3	12.9	1.34
	Lower Class (N=48)	23.3-100.0	88.0	20.1	P .0901 > .05
E.	Middle Class Negro (N=37)	50.0-100.0	91.5	14.5	.90
	Lower Class Negro (N=29)	23.3-100.0	87.3	20.7	P .1635 > .05
F.	Middle Class White (N=29)	56.6-100.0	95.5	10.1	.82
	Lower Class White (N=19)	26.6-100.0	89.1	19.2	P .2061 > .05
G.	Middle Class Negro (N=37)	50.0-100.0	91.5	14.5	.32
	Middle Class White (N=29)	56.6-100.0	95.5	10.1	P .3745 > .05
H.	Lower Class Negro (N=29)	23.3-100.0	87.3	20.7	.32
	Lower Class White (N=19)	26.6-100.0	89.1	19.2	P .3745 > .05

*Formula for Z score as used here and in Tables 6 and 7,
(Siegel, 1956):

$$Z = \frac{U - \frac{n_1 + n_2}{2}}{\sqrt{\frac{(n_1)(n_2)(n_1 + n_2 + 1)}{12}}}$$

**Significant at .05 level.

"attempts to solve alone," with smaller variability, than did the younger group. When age became an intervening variable, the Puzzle-box Test may measure not only reactions to frustration but also span of attention or the child's ability or willingness to stick to the job at hand which are age-related behaviors.

Comparison B shows sex differences in performance. Among the subjects, there were 54 girls and 60 boys. The girls spent more time attempting to solve the puzzle than did boys, but the difference was not statistically significant. It has been observed that girls are generally more conforming and comply more readily with the wishes of adults. They also generally have better manipulative skills with less tendency to hyperactivity. This may account for the girls in the sample having worked at the puzzle more persistently than the boys.

Comparison C is between the total white and total Negro groups. The mean time spent in "attempts to solve alone" was 3.3 percentage points higher and the SD was smaller for the white subjects as compared to the Negroes, indicating that the white group in general spent more time in attempting to solve the puzzle than did the Negro group in general. This difference, however, was not statistically significant.

Comparison D, between all subjects in the two class groupings (middle and lower) shows, first, that the range

for the middle class was narrower than it was for the lower class as a whole. The mean time spent trying to solve the puzzle was greater for the middle class subjects than for the lower class group. However, again the statistical test used showed this difference was not significant.

Comparisons E and F relate to class sub-groups within ethnic groups, and show in general "better" performance (i.e., more time spent in trying to solve the puzzle) by middle class subjects in both Negro and white groups. Although the differences were not statistically significant, the trend was consistent.

Comparisons G and H show performance of the racial groups when class is held constant. The data show that the white groups in both the middle and the lower classes spent proportionately more time working at the problem (95.5 compared to 91.5 and 89.1 compared to 87.3) than did the Negro groups. The differences, however, were slight and not statistically significant.

Findings - "Rationalizing." Results for the behavior "rationalizing" are presented in Table 6, and it can be noted that in no group comparison was a significant difference observed.

Comparison A, between younger and older groups of children, indicates that the younger age group did not rationalize as much as did the older group. Comparison B is between girls and boys. It shows the boys to have

TABLE 6

PERCENT OF TOTAL TEST TIME
SPENT IN "RATIONALIZING"

	Groups Compared	Range	Mean	S.D.	Z Scores on U Test
A.	Younger Group (N=53)	0 - 20.0	1.8	4.2	1.07
	Older Group (N=61)	0 - 20.0	2.02	4.1	P .1423 >.05
B.	Girls (N=54)	0 - 16.6	1.6	3.3	.11
	Boys (N=60)	0 - 20.0	2.3	4.8	P .4562 >.05
C.	White (N=48)	0 - 20.0	2.3	4.4	.95
	Negro (N=66)	0 - 20.0	1.7	4.0	P .1711 >.05
D.	Middle Class (N=66)	0 - 20.0	2.3	4.8	.35
	Lower Class (N=48)	0 - 16.6	1.4	3.1	P .3632 >.05
E.	Middle Class Negro (N=37)	0 - 20.0	2.4	4.9	1.0
	Lower Class Negro (N=29)	0 - 6.6	.8	2.0	P .1587 >.05
F.	Middle Class White (N=29)	0 - 20.0	2.1	4.6	.69
	Lower Class White (N=19)	0 - 16.6	2.4	4.0	P .2451 >.05
G.	Middle Class Negro (N=37)	0 - 20.0	2.4	4.9	.03
	Middle Class White (N=29)	0 - 20.0	2.1	4.6	P .4880 >.05
H.	Lower Class Negro (N=29)	0 - 6.6	.8	2.0	1.5
	Lower Class White (N=19)	0 - 16.6	2.4	4.0	P .1469 >.05

rationalized more than the girls. The differences were not statistically significant in either case.

Comparison C is between the two ethnic groups. The range was the same for both groups, but the white subjects were found to have rationalized more than the Negro subjects. The difference, however, was not statistically significant.

Comparison D, between the middle class and the lower class as a whole, shows that in general, the middle class children rationalized slightly more, but without the difference indicating statistical significance.

Comparison E is between middle class Negro and lower class Negro subjects. It showed the middle class group to have rationalized for a considerably greater proportion of time than the lower class group. Although the difference was not significant statistically, it may be approaching significance.

Comparison F is between classes within the white group. The lower class group rationalized more than did the middle class group, although the difference was slight and not significant.

Comparison G, between middle class Negro and middle class white groups, shows a negligible difference (the lowest Z score in Table 6).

Comparison H is between lower class white and lower class Negro groups. The lower class white group "rationalized" considerably more than did the lower class Negro

group. The Z score of 1.5 indicates that this difference approached significance.

Findings - "Seeking Help." Table 7 shows the findings on the behavior category "seeking help." Comparison A, between the two age groups, showed a statistically significant difference between the older and the younger group. The younger subjects as might reasonably be expected, asked more help than did the older ones.

No significant difference was found in comparison B, between boys and girls, though the girls sought help during a slightly larger proportion of the time than did the boys.

Comparison C indicates the extent to which the two ethnic groups sought help in solving the puzzle. The proportion of time spent in seeking help by the white subjects was only slightly greater than by the Negro subjects. The difference was small and not significant.

Comparison D is between the two classes. Here, the lower class group as a whole, sought slightly more help than did the middle class group. However, the difference was slight and again the probability of a true difference was negligible.

Comparison E, between classes within the Negro group showed the middle class children seeking considerably more help than the lower class children, without the difference reaching the level of probability accepted in this study as significant.

TABLE 7
PERCENT OF TOTAL TEST TIME
SPENT IN "SEEKING HELP"

Groups Compared		Range	Mean	S.D.	Z Scores on U Test
A.	Younger Group (N=53)	0 - 63.3	14.7	17.4	2.2*
	Older Groups (N=61)	0 - 50.0	7.2	10.2	P .0136 < .05
B.	Girls (N=54)	0 - 63.3	11.2	15.6	.38
	Boys (N=60)	0 - 50.0	10.4	13.4	P .3520 > .05
C.	White (N=48)	0 - 63.3	11.1	13.8	.02
	Negro (N=66)	0 - 63.3	10.4	15.0	P .3156 > .05
D.	Middle Class (N=66)	0 - 63.3	10.4	15.0	.02
	Lower Class (N=48)	0 - 50.0	11.1	13.7	P .4920 > .05
E.	Middle Class Negro (N=37)	0 - 63.3	11.5	15.3	1.53
	Lower Class Negro (N=29)	0 - 50.0	8.9	14.5	P .0630 > .05
F.	Middle Class White (N=29)	0 - 63.3	9.0	14.5	2.05*
	Lower Class White (N=19)	0 - 40.0	14.3	11.7	P .0202 < .05
G.	Middle Class Negro (N=37)	0 - 63.3	11.5	15.3	.83
	Middle Class White (N=29)	0 - 63.3	9.0	14.5	P .2033 > .05
H.	Lower Class Negro (N=29)	0 - 50.0	8.9	14.5	2.07 *
	Lower Class White (N=19)	0 - 40.0	14.3	11.7	P .0192 < .05

*Significant at .05 level.

A statistically significant difference was found in comparison F, between the classes within the white group. The lower class white children spent a much greater proportion of the test time seeking help than did the middle class white children (14.3 ± 11.7 as compared to 9.0 ± 14.5).

Comparison G, between middle class Negro and middle class white subjects showed a slight difference in which the middle class white group asked less help than the middle class Negro group. Here again, however, the difference was not significant.

Comparison H, between lower class groups of Negroes and whites, showed that the lower class white group spent a greater proportion of time in seeking help than did the lower class Negro group. The difference here was statistically significant.

Qualitative Analysis of Responses. The theoretical literature, tests and research have indicated that failure produces frustration, and frustration in turn, results in aggression, or regression, or in a range of types of reactions. The studies which have used the Puzzle-box Test as a measure of reactions to failure, have reported a variety of reactions in the subjects. In the present study, several behavior categories were observed in addition to the three categories analyzed above (See Record Sheet in Appendix A.) "Facial expressions" were a fairly frequently recorded type of "behavior"--chiefly, movements of the lips

and the tongue were observed. There seemed, however, no standard way to codify those expressions and therefore this "behavior" was not included in the analyses.

"Emotional expressions" were observed too infrequently to be interpreted meaningfully. Some of the children were so "closed" that it was hard to "read" their feelings or mood from their faces, and there was no other segment of behavior to give any clue to their state of mind at that time.

A number of children carried on an almost continuous conversation either with themselves or with the investigator, sometimes related to the test, sometimes quite irrelevant, and many times it consisted of incomprehensible mumbling. This kind of verbalization could be interpreted as characteristic of a young child's way of coping with a difficult situation, or as a sign of nervousness, or possibly as a carefree attitude. In order to avoid too much subjective interpretation, verbalizations were not analyzed. Several examples typical of the subjects' verbalizations are included in Appendix B to give a further picture of the children's reaction to the test.

No "destructive behavior" (toward objects or persons), or "motor manifestations of frustration" (stamping foot, clenching fist, etc.) were observed, and in this respect the present study was different from earlier studies. Furthermore, there were very few "emotional responses," such

as crying and whining. On the whole, the subjects did not seem to feel frustration, or if they did it was not observable.

Interpretation of Results - Discussion

General Comments. The findings of the present study are in general agreement with those reported by Keister (1937) and Zunich (1964). Both have noted that the majority of children were interested and made attempts to solve the puzzle. They also found a low frequency of crying, whining, and "destructive behavior." However there are some points of disagreement on individual categories.

In the Keister study, 18 per cent of the total group showed undesirable or "immature" responses. These were the children who were selected to serve as subjects for the training program. In the present study sample, only six children (5 per cent of the subjects as shown in Table 4), may be considered to have met her definition of "immaturity." These were the children who "ran away" from the task. Had they been included in the study, however, those children who left the testing room within the first three minutes of the test period, or those who were not willing even to go with the tester, or those who came in reluctantly, listened to the first instructions and left the room without even touching the puzzle box (despite coaxing by the investigator and attraction of toys), the proportion of "immature" responses might have been comparable to Keister's. These

were probably the subjects who would have given the "immature" reactions or the less "bland" reactions had there been some way to insist they stay to work at the task. In a sense, they were running away from a situation in which they felt uncertain of "living up" to what was expected of them.

The Zunich study (1964) concentrated on discovering age and sex differences in response to the Puzzle-box Test. When the three categories analyzed in the present study are compared with the categories in Zunich's study, some disagreements are found. He did not find significant differences between age groups in "attempts to solve alone." He did find, however, significant differences between age groups in both "rationalizing" and "seeking help." In the present study, the age differences found to be significant were in the categories "attempts to solve alone" and "seeking help," but not in "rationalizing." In both Zunich's study and the current study, there was observed, however, a general trend toward older children working at the puzzle for a longer time and doing more "rationalizing."

The disagreement between Zunich's findings and the present study may be due to a difference in the way the ages were grouped. His groups were three-year-olds and four-year-olds, while in this study the age groupings were three to four-and-one half years and four-and-one half to six years. As regards sex differences, Zunich found some

statistically significant differences between girls' and boys' behavior in all the three categories, while no significant differences were found in the present study. Both studies are in general agreement that girls spent more time in attempting to solve the puzzle and less time in rationalizing their failure than did the boys. The boys in Zunich's sample asked for help more than did the girls, whereas in the present study the reverse was observed (girls asked more help than boys).

The lack of agreement between the present study and previous studies may be attributed to the factors of (a) sample, (b) setting, and (c) investigator. The sample for all previous studies using the Puzzle-box Test has been a homogeneous middle class white group, enrolled in laboratory nursery schools, subjects who were accustomed to testing situations. In the present investigation, the subjects were from two ethnic groups of middle and lower class backgrounds, attending day care centers where little or no testing had been carried out. To participate in an individual test was a novel situation for these children and was perhaps regarded by them as a special treat. The present study was also different from other studies in one additional factor, that is, that the investigator was a foreigner, which may have given the test situation some air of "unreality," possibly regarded by the children as a highly unusual experience.

Several explanations for the findings of the present study may be offered. First, the subjects tested may have been mature enough to control their behavior, even at the preschool age. They were probably aware of the behavior that was expected of them in the presence of a stranger or an outsider. They wanted to "live up to" this expectation and dutifully worked at the task set for them. Second, it is possible that the fifteen-minute-period was not long enough for many of them to become frustrated or satiated. The investigator felt certain that some of them would have tried still longer had they been allowed more than 15 minutes to solve the puzzle. With others, however, it was obvious that they felt relieved when told there was no more time to work on the test. Third, the subjects may have been highly motivated toward this task, which interested them. They could see that they were failing but were not ready to accept their failure, as they felt some hope of achieving success in the end. They could have been so intrigued by the test and so challenged that they liked working on it and, feeling they could eventually solve it, did not feel frustrated. Fourth, the presence of the tester could have been a factor influencing the behavior of children. It was a treat for the children in these centers to go and "play" alone with a person who was different in attire and manner of speech from the adults they knew. She had earlier spent some time in making friends with them, and

all the children who were subjects were eager to participate in her "game."

Other studies (Dreger & Miller, 1960; Hammer, 1953; Goff, 1949) involving the race variable have suggested that differences might be found between the behavior of Negro and white subjects. Everyday life experiences of Negroes are probably more frustrating than those of whites and this may be expected to reflect in their behavior, even at the preschool age level. Some studies (Horowitz, 1939; Goodman, 1952; Stevenson & Stewart, 1958), involving preschool age children indicated that even at this age children were aware of their own racial differences and reacted differently toward people of different "color." If one could assume a carry over from the frustrating life situation of Negro children to a frustrating testing situation, it might be revealed in the present research. The results, however, showed little difference between the behavior of Negro and white children. This could mean that there was no carry over from other situations, or it could mean that the frustration was minor compared to the real-life situation of some subjects. The test was not designed as a projective test to measure personal threat, although for some children it probably contained an element of threat.

Statistically Significant Differences Between Groups.

Table 5 and 7 contained four comparisons where statistically significant differences were found:

1. Comparison A, Table 5, between the younger and older groups in "attempts to solve alone," with older children spending a greater proportion of time attempting to solve the puzzle;

2. Comparison A, Table 7, between the younger and older groups in "seeking help," with younger children asking for help a larger proportion of the time;

3. Comparison F, Table 7, between the middle class and lower class white groups in "seeking help," with lower class children asking more help than middle class children;

4. Comparison H, Table 7, between the lower class Negro group and the lower class white group in "seeking help," with lower class white children asking more help than lower class Negro children.

The difference found between the older and younger age groups in "attempts to solve alone" should not surprise the experts in child development. The older children spent more time attempting to solve the puzzle than did the younger children. It is one of the aspects of growth and development that, as a child grows older, his span of attention expands and his ability to carry on with a task increases.

Another significant difference found was between the older and younger groups in "seeking help." Younger children asked more help than did the older children. The younger a child is, the more he may expect help from an

adult. In all likelihood, his experience has been that adults will help when he meets difficulty, but as he grows older he comes to rely more on his own resources in solving problems.

The third area in which differences were found to be statistically significant was the middle and lower class white groups in the matter of "seeking help." The lower class subjects asked more help than did the middle class subjects. The children in the center that served the lower socio-economic group seemed to feel more free and friendly with the tester and that may explain why they sought more help. It may be a reflection of their family situation. The majority of the children have come from broken homes, with their mothers working outside the home. The children seemed to crave affection, attention and close physical contact. This same group of children received a great deal of help and encouragement from their teachers when they asked it, perhaps because the adult-child ratio in this center was higher than the middle class center. In the latter center the children may have learned to be self-reliant, and not to ask much help from adults.

Finally, a significant difference was found between the lower class Negro group and the lower class white group in that the Negro children did not seek help in solving the puzzle to the extent that the white children of the same class did. It has been pointed out that the younger age

group asked more help than did the older group and this difference was statistically significant. The age range of the lower class Negro children was 40-71 months (mean age, 55.3 months), the lower class white group was younger (mean age 54.3 months) with a range of 36-70 months. Thus, age rather than race differences may be responsible for the finding, since (within the lower class) the Negro group members were, on the average, older than the white group members. Furthermore, children attending a day care center spend up to ten hours daily under the care of the teachers and away from their homes. They may thus be influenced by the school philosophy and the attitudes of the teachers as much as, if not more than, by their parents' attitudes. The lower class children in question (Negro) might have been affected by the middle class values of the teachers. The philosophy and practice of the teacher may be regarded as a rather powerful determinant of the child's behavior, under conditions of such extensive contact.

The Questions Answered by the Study. The present study was an attempt to answer certain questions relative to the relationship between race and class membership and adaptive behavior in a failure situation. The five specific questions raised in Chapter I are restated below and are answered on the basis of the findings reported above.

1. How do children between the ages of three and six years react to a situation in which they are experiencing frustration?

As far as the particular group of 114 subjects was concerned, certain characteristics could be discerned. In the first place, only three categories of behavior were observed frequently enough with this group to merit analysis. Other categories were not analyzed because of having been infrequently observed. In the first response category, "attempts to solve alone," all the subjects except six worked on the test for the whole of, or the majority of, the test period. Even if they did not succeed in solving the puzzle, they kept on trying. In this connection it is interesting and important to note that the age of the subject was a significant factor in determining the length of time he worked, his perserverance. The older children spent more time attempting to solve the puzzle than did the younger children, and the difference was statistically significant. As to sex differences, there was a slight difference in the behavior of boys and girls, with girls working at the task for a larger proportion of the time, although the difference was not statistically significant.

The other two categories of behavior "rationalizing" and "seeking help," are not independent categories. While the children "attempted to solve," they also "sought help" and at the same time "rationalized." Apart from "attempts to solve alone," "seeking help" seemed to be a common reaction to failure in children between three and six years of age. Within the total group, younger children sought

more help than older children did. The significant difference between the two groups, suggests that the younger the child is, the more he asks for help from adults. There was no sex difference in this regard, nor were sex differences found in rationalizing behavior. "Rationalizing" did not seem to be a typical reaction, at least for this sample.

2. Do Negro children regardless of class membership react differently in this situation than white children?

The results for all three behavior categories showed little difference between the white and Negro children's responses on the test. While the Negro children as a group spent slightly less time in "attempts to solve alone" than did the white children as a group, the former also spent less time in "rationalizing" and "seeking help." These differences, though consistent, were not statistically significant. On the basis of the findings, the conclusion must be drawn that Negro children's reactions in this situation were similar to those of white children.

3. Do children from a lower socio-economic group, regardless of race membership, react differently from children who are members of a middle socio-economic group?

Although the lower class subjects as a group spent slightly less time than did the middle class subjects in attempting to solve the puzzle, they rationalized their failures less than did the middle class children. The lower class subjects asked for help slightly more than did the

middle class subjects. Since none of these differences was statistically significant, the conclusion must be drawn that children with membership in the lower class reacted no differently to this test than those from the middle class.

4. Within racial groups, are there differences between children who come from different socio-economic backgrounds?

The data of the present study suggested some differences between the classes within both racial groups. In the case of the Negro groups, the differences observed approached statistical significance, the middle class Negro group spending more time "attempting to solve" the problem and more time "seeking help" and "rationalizing," than did the lower class Negro group as a whole. Within the white group, as between the middle class and the lower class, the former spent more time "attempting to solve" and slightly less time "rationalizing," and in "seeking help" behavior there was a significant difference between the groups, the lower class white group asking more help than the middle class white group.

5. Within class groups are there differences between children who come from different racial backgrounds?

Between the white and Negro children of middle class, no statistically significant differences in any of the response categories were found. Middle class white children

made only slightly more attempts to solve the problem, did slightly less "rationalizing" and less "seeking help" than middle class Negro children. Between white and Negro children of lower class, white children "attempted to solve alone" for a slightly larger proportion of the time but also "rationalized" more and spent considerably more time "seeking help" (the latter finding being statistically significant), than Negro children of the lower class.

CHAPTER V

SUMMARY AND CONCLUSIONS

Summary

Learning is a part of the total developmental process. An individual acquires his characteristic modes of response through failure as well as through success, and these modes of response are learned in the context of social and cultural settings.

The Problem. Studies have indicated that preschool children are capable of giving a range of reactions to a situation which they find frustrating. Studies using subjects from different races have pointed out that children as young as three and four years of age are aware of racial differences and have different attitudes toward people of a different "color." A number of studies have revealed that different childrearing practices are in use among different social classes, and the behavior of young children is thought to be affected by childrearing practices. The present study was an attempt to describe the reactions to a frustrating situation of children from different racial and class backgrounds. Since the studies of frustration which have used preschool samples have involved almost exclusively subjects drawn from white, middle class family backgrounds,

enrolled in university laboratory nursery schools and kindergartens, the present study used preschool children from lower as well as middle socio-economic backgrounds and from Negro as well as white families, enrolled in child care centers in which they spent the full day.

Subjects. Five day care centers in Greensboro, North Carolina, enrolling children from 3 to 6 years of age, furnished subjects for the study. Family background information on each child was obtained, and two judges worked independently to classify the children on the basis of the data into middle and lower class groups. Judgments were based on composite information on Hollingshead's (1958) four social class indices: occupation, education, income, and area of residence. Only those subjects on whom there was 100% agreement between the judges as to class membership were retained in the study. One hundred and fourteen (114) children served as subjects, 66 were Negro (29 lower and 37 middle class) and 48 were white (19 lower and 29 middle class). The age range of the total group was 36-71 months, with a mean age in months of 54.9, and SD 9.3.

The Test. The test used to measure the subjects' reactions to failure was the "puzzle-box test," a replication of the test developed by Keister (1938). The puzzle box contained a set of ten figures and the problem was to place all the figures flat inside the box and close the lid. When the child could not succeed in putting all the blocks

back into the box where he had seen them lying a few minutes before, his failure was obvious to himself. The test was administered to one child at a time. A record was made of the subject's responses during half minute intervals and 15 minutes were allowed each subject for scoring the problem.

Scoring - Calculating Group Differences. The percentage of the total time spent on each of the behavior categories recorded as "attempts to solve alone," "rationalizing," and "seeking help" was calculated for each subject. These percentages become the three "scores" for each subject. The Mann-Whitney U Test was applied to the data to reveal differences, if any, between groups so far as age, sex, race, and class were concerned.

Limitations

1. Children's reactions to failure were measured in one test situation only. A battery of tests supported by observations in the "free" situation of the day care center would have given a better picture of the subject's reactions to frustration or failure.

2. A variety of reactions were observed including facial expressions and verbalizations, but these could not be quantified due to the lack of means to codify them.

3. The categories of behavior analyzed were not independent of each other. This limited the choice of the test of statistical significance that could be used to analyze the data.

4. The sub-group samples were too small to make any broad generalizations possible. The lack of a sufficient number of subjects was especially marked in the lower class white group. The intent was to use only children enrolled in day care centers, and the researcher was consequently limited as to the number of subjects (particularly from lower class backgrounds) that could be found in such centers in Greensboro.

Conclusions

For the particular test used, and for the present sample, the following conclusions may be drawn:

1. Children between three and six years of age generally made attempts to solve the problem, rationalized their lack of success relatively little, and tried to achieve success through seeking help with the task. Within the total group, the younger age group spent less time attempting to solve the puzzle and sought more help in solving it than did the older age group. There was no significant difference between the behavior of boys and girls.

2. There was no difference in performance on this test between the white and Negro groups as a whole.

3. There was no difference in performance on this test between the total groups of middle class and lower class subjects.

4. As between middle class and lower class Negro

subjects, no difference in performance was found. As between middle class and lower class white subjects, there was a statistically significant difference in "seeking help." The lower class subjects asked more help than did the middle class subjects.

5. As between middle class Negroes compared to middle class whites, there was no difference in performance on this test. As between lower class Negro and lower class white subjects, there was a significant difference in "seeking help," with the white children asking more help than the Negro children.

6. Since the differences found between the sub-groups were on the whole slight and somewhat inconsistent, the conclusion must be drawn that other factors besides race and class were operating as variables.

Recommendations for Further Research

In light of previous related research, the findings of the present study, and the researcher's experience with the investigation, several recommendations for further study seem appropriate.

In the present study, the sub-group samples were too small to enable any broad generalizations to be made. It was particularly difficult to ascertain that the sub-groups according to class were not overlapping. It is suggested therefore that the study be repeated with a larger total sample, with class sub-groups entirely discrete. This

might mean perhaps comparing lower class children with upper-middle class children.

Cultural influences might presumably be stronger at older age levels than at the preschool level. Attitudes toward self, toward success and failure, and modes of behavior in the face of a frustrating task might be more easily observed in older children. Hence it might be well to use a modification of this Puzzle-box Test with slightly older children, perhaps with six- to eight-year-olds.

One test situation alone is insufficient to yield a clear picture of adaptive behavior of individuals in a given group. If the Puzzle-box Test could be used in conjunction with other tests of reaction to frustration and be accompanied by observations of children in the free play situation, a more detailed picture of the behavior patterns in children from different ethnic and class groups would be obtained. Generalization of findings would then be more justified than when based on one test situation alone.

The lack of a standard method of scoring responses on the Puzzle-box Test has been pointed out by various researchers as a drawback to the use of this test. In the present study, the investigator felt particularly the need for a system of scoring the qualitative aspects of the subjects responses. It is recommended that further research based on this test should establish a uniform method of scoring both quantitative and qualitative responses.

REFERENCES

- Barker, R. G., Dembo, Tamara, & Lewin, K. Frustration and regression. University of Iowa studies. Studies in child welfare, 1941, 18, No. 1.
- Block, Jeanne & Martin, B. Predicting the behavior of children under frustration. J. abnorm. soc. psychol., 1955, 51, 281-285.
- Burton, A. The aggression of young children following satiation. Amer. J. Orthopsychiat., 1942, 12, 262-267.
- Davis, A. & Havighurst, R. J. Social class and color differences in child-rearing. Amer. Soc. Rev., 1946, 11, 698-710.
- Dollard, J. Caste and class in a southern town. New York: Doubleday, 1937.
- Dollard, J., Doob, L., Miller, N. E., Mowrer, O. H., & Sears, R. R. Frustration and aggression. New Haven: Yale Univ. Press, 1939.
- Dreger, R. M., & Miller, K. S. Comparative psychological studies of Negroes and whites in the United States. Psychol. Bull., 1960, 57, 361-402.
- Ericson, Martha C. Child rearing and social status. Amer. J. Sociol., 1940, 52, 190-192.
- Freud, S. Civilization and its discontents. New York: J. Cape & H. Smith, 1930.

- Freud, S. A general introduction to psycho-analysis. New York: Liveright Publ. Corp., 1935.
- Gilliland, A. R. Socio-economic status and race as factors in infant intelligence test scores. Child Developm., 1951, 22, 271-273.
- Goff, Regina Mary. Problems of emotional difficulties of Negro children. New York: Bureau of Publ. Teachers College, Columbia Univ., 1949.
- Goodman, Mary Ellen. Race awareness in young children. Massachusetts: Addison-Wesley Press, 1952.
- Hammer, E. F. Frustration-aggression hypothesis extended to socio-racial areas: comparison of Negro and white children's H-T-P's. Psychiat. Quart., 1953, 27, 596-607.
- Havighurst, R. J. & Davis, A. A comparison of the Chicago and Harvard studies of social class differences in child-rearing. Amer. Soc. Rev., 20, 438-442.
- Hollingshead, A. & Redlich, F. C. Social class and mental illness. New York: Wiley, 1958.
- Horowitz, Ruth E. Racial aspects of self-identification in nursery school children. J. Psychol., 1939, 7, 91-99.
- Keister, Mary E. The behavior of young children in failure. Univer. of Iowa studies. Studies in child welfare, 14. Studies in preschool education I, 1937, 29-82.
- McCandless, B. R. Children and adolescents. New York: Holt, Rinehart and Winston, 1961.

- McKee, J. P. & Leader, Florence B. The relationship of socio-economic status and aggression to the competitive behavior of preschool children. Child Developm., 1955, 26, 135-142.
- Maccoby, Eleanor E. & Gibbs, Patricia K., et al. Methods of child rearing in two social classes. In W. E. Martin and Celia Stendler (Ed.), Readings in child development. New York: Harcourt, Brace, 1954.
- Miller, N. E., Sears, R. R., Mowrer, O. H., Doob, L. H. & Dollard, J. The frustration-aggression hypothesis. Psychol. Rev., 1941, 48, 337-342.
- Miller, D. R. & Swanson, G. E. Inner conflict and defense. New York: Henry Holt, 1960.
- Morland, K. Development of racial bias in young children. Theory into Practice, 1963, 2, 120-127.
- Otis, Nancy B. & McCandless, B. R. Responses to repeated frustrations of young children differentiated to need area. J. abnorm. soc. Psychol., 1955, 50, 349-353.
- Pettigrew, T. F. A profile of the Negro American. New York: Van Nostrand, 1964.
- Ray, W. S. Statistics in psychological research. New York: Macmillan, 1962.
- Rosenzweig, S. An outline of frustration theory. In J. McV. Hunt (Ed.), Personality and the behavior disorders. New York: Ronald Press, 1944.

- Sears, R. R., Maccoby, Eleanor E. & Levin, H. Patterns of child rearing. New York: Row, Peterson, 1957.
- Siegel, S. Nonparametric statistics for the behavioral sciences. New York: McGraw-Hill, 1956.
- Stanton, Dorothy. A study of failure. Charact. & Pers., 1938, 6, 321-334.
- Stevenson, H. E. & Stewart, E. C. A developmental study of racial awareness in young children. Child Developm., 1951, 3, 399-409.
- Thomas, R. M. Effects of frustration on children's paintings. Child Developm., 1951, 22, 123-132.
- Witz, E. Margaret. Norms at the three and four year age levels on a preschool test in meeting difficult situations. Unpublished masters thesis, State Univer. of Iowa, 1945.
- Yarrow, L. J. The effects of antecedent frustration on projective play. Psychol. Monogr., 1948, 62, No. 6 (Whole No. 293).
- Zunich, M. Children's reactions to failure. J. genet. Psychol., 1964, 104, 19-24.

APPENDIX A

FAMILY BACKGROUND INFORMATION

Name of the Child _____ Date _____
 Age of the Child _____ Date _____
 Parents' Marital Status _____

Father _____ Mother _____

Occupation: _____

APPENDIX A

Education: _____

Income: _____

Address of the Family: _____

APPENDIX A

FAMILY BACKGROUND INFORMATION

Name of the Child	_____	S.No.	_____
Age of the Child	_____	Race	_____
Parents' Marital	_____	Class	_____
Status	_____		

Father

Mother

Occupation:

Education:

Income:

Address of the Family:

	Time in Minutes														Sex _____	Age _____	T O T A L
	.5	1.0	1.5	2.0	2.5	3.0	3.5	---	12.5	13.0	13.5	14.0	14.5	15.0			
Attempt to solve alone																	
Destructive Behavior																	
Directing the experimenter																	
Emotional responses																	
Facial expressions																	
Motor manifestations																	
No attempt to solve the puzzle																	
Rationalizing																	
Seeking attention to himself or to his activity																	
Seeking contact (e.g. "come over and sit by me.")																	
Seeking help (e.g. physical- "you do this for me." mental- "How can I put this in?")																	
Seeking information (What kind of puzzle is this?)																	
Talking to himself																	
General impression (interested, indifferent, sulky, happy)																	

APPENDIX B

PERFORMANCE ON PUZZLE-BOX TEST

SPECIMEN VERBALIZATIONS

M; 4-4; middle class; N.*

Look at that duck. Look what I got here. I cannot put that in. I got to start all over again. Aeroplane here, duck there, ship here. (To tester): When you came into my class yesterday, you did not look at me, did you? (Talks in low tone): Rabbit! Where can I put the rabbit? (To tester): When I saw you yesterday, you did not look at me, did you? Why did you not look at me? Why? (Talks again but in tones too low for the tester to hear).

M; 4-11; middle class; N.

I got two out. One out and then one out. I got one more. That is a boat and that is a butterfly. This and this go right here. (Talks too low for tester to hear). Aeroplane is too short. I got to find a place for this. That is here. (Again too low to hear). I want to put them back but I don't know how. You know how to make a witch? I can make a hat like this. (Shows with his hands.) I got some toys. I got to put that in. (Subsequent verbalization

*Indicates: male; four years, four months; middle class; Negro.

too low to hear.)

M; 4-11; lower class; N.

What is this? One, two, three, four, five, six, seven, eight, nine, and ten. Rabbit is there, duck is there, fish is there. (Sighs frequently.) Oh-oh! duck here. Fish can go there. Put the girl here. Put the girl right here. Fish, fish. Once I had one black fish. He died. I put that in a pot and he died. One, two, three, four, five, six, seven, eight, and nine. (Makes some nonsense sounds.) Hard is the fish. Here, right here. I can get that in. (Sighs). Did you ever go to the beach? Where did you get all these? I can put this backward. How can I get this fish? Right here, right here. Put the fish in. Put the bird there. Right. (Makes meaningless sounds.) Do you know where to put the duck? You can put it right here. Clock there. Twelve o'clock. Did you see twelve o'clock? I did. But that was no good. I'll take them all out and put them back. This is plastic. It looks like plastic. Twelve o'clock out. Fish, aeroplane, butterfly. (Coughs). Mamma got me some cough medicine. (Sighs). I can get it out and put the rabbit in. There is no place for aeroplane. What are you doing? Are you a girl? Twelve o'clock. I can see television, can't I? I almost got them. I should not put the clock there, should I? (Sighs). I'll start all over again. I got it.

M; 3-4; lower class; N.

It is an aeroplane. It is a duck. Where this duck go? Quack, quack, quack! I do not know where the duck go. I put all this in but don't know where the duck go. Quack, quack. (Examines the duck in his hand.) I do not know where the duck go. I can't put this in. How do you put this in? How you fix this in? Where the duck go? I can't. How you put the duck? Now I put the duck. Don't know how to put the aeroplane. Where to put the aeroplane?

M; 5-7; middle class; W.*

It is a kind of hard. I am glad you are teaching me this hard thing. I'll have to do harder things when I go to real school. How to get this stuff in? There is not enough space. It is kind of hard. There is not enough room. It is real hard.

M; 5-8; middle class; W.

You were in my mother's class. Too mixed up. Sailboat catch fish. Sailboat catch fish. Sailboat catch fish. Dolly. This is a hammer looks like an aeroplane (jokingly). Oh, I forgot, this is an aeroplane which looks like a hammer. (Makes sound of aeroplane.) I am mixed up again. You know how to fix it? (Sings). Come on, rabbit, go, go, go. I am a go, go, man. This is where aeroplane goes, this is where fish goes, and glove goes. Maybe we

*Indicates: Male; five years, seven months; middle class; white.

try again. Here we go. Let's see if it closes. No, it won't. I am all mixed up again. What would I do? Maybe it won't fit. (Sings). Bird plus rabbit, that is good. Bird plus rabbit, that is good. Well, I'll put it right here. Four more minutes. Oh, boy, maybe we will leave it. Got to fix it some way. Now let us see. Girl plus rabbit, aeroplane, clock. (Makes meaningless sounds). Where would this go? Oh, my gosh! I got all mixed up again. How where we put this? Ah-ah, I know where to put the duck. It is hard to get in. Maybe it might go right there. Ten more minutes. I know. I am afraid I'll miss my program. Oh boy, oh boy, oh boy, OH BOY! What a time! I wish I were back in the room. I'll do it all over again. Now let us see. I'll put it right here, here, here, and there. Duck, fish, dolly.

F; 4-0; lower class; W.

Where does the clock go? Can the bunny stand up? It stands up. Can the boat stand? Where these things go? (Talks to self, asks questions and answers then for herself). This goes here, this goes there. How this go? This is falling. Butterfly. Now I got it. Clock goes there, butterfly here. It goes right here. My mamma is mopping. I have to make room for each one. I am going to put in one more time and shut the door. Clock goes right there. That is back there. This is right here. You know what? I'll give Mr. Reddle this puzzle. That goes here, that goes

here. You have to make room for this. Ugly boat. That is what I call ugly boat. (Giggles). Shut the door. My mamma is mopping the room. You don't have to sweep in the morning. Is this the way it can fit? I got to figure out to put them in. Got to know how this fit. (Sings). Where can I put this in? (Points to lower part of boat). Is this supposed to come loose? The boat won't fit in. Almost got it.

F; 3-10; lower class; W.

Where this goes? Where this goes? Is this right? Where this goes? Where clock go? It is round. Hey, does this go like this? Like that? Where this goes? Is this for her? (Points to mitten and girl). I can't fix this in. I can't. Where this lady go? Where this go? What is this?